FOUR VARIETAL TRANSFERS OF UNITED STATES TREES

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Nomenclatural transfers for four varieties of United States trees in the genera *Persea, Populus, Quercus,* and *Pinus* are made here. They are desired for this publication now in press: Checklist of United States Trees (Native and Naturalized), (U.S. Dep. Agric., Agric. Handb. 541. 1979).

Variations below the rank of species are called varieties in Forest Service checklists. Historically, the rank variety has been widely adopted for names of United States trees. Some modern workers have substituted the rank subspecies for geographical variations, while others distinguish both ranks. Originally, the subspecies was an intermediate rank for optional use if needed, such as in a species with many varieties. The later usage of subspecies has confused the nomenclature and would require numerous name changes or transfers.

PERSEA BORBONIA var. PUBESCENS (Pursh) Little, comb. nov.
swampbay

Laurus carolinensis var. β *pubescens* Pursh, Fl. Am. Sept. 1: 276. 1814.
Tamala palustris Raf., Sylva Tellur. 137. 1838.
Persea carolinensis var. *palustris* (Raf.) Chapm., Fl. South. U.S. 393. 1860.
Persea carolinensis var. β *pubescens* (Pursh) Meissn. in DC., Prodr. 15(1): 51. 1864.
Persea carolinensis f. *pubescens* (Pursh) Mez, Jahrb. Bot. Gart. Berl. 5: 176. 1889.
Persea palustris Sarg., Silva No. Am. 7: pl. 302. 1895; *nom.*
Persea pubescens (Pursh) Sarg., Silva No. Am. 7: 7 [pl.302]. 1895.
Tamala pubescens (Pursh) Small, Fl. Southeast. U.S. ed. 2, 822, 1375. 1913.
Persea palustris (Raf.) Sarg., Bot. Gaz. 67: 229. 1919.
Persea borbonia f. *pubescens* (Pursh) Fern., Rhodora 47: 149. 1945.

Apparently the desired varietal combination has not been published. However, one collection was distributed with a printed label bearing the same trinomial without rank or author: Geo V. Nash 435, Eustis, Lake County, Fla., April 15-30, 1894 (US).

Swampbay was first distinguished as a variety in 1814, as a species in 1838, and as a form in 1889. Fernald (Rhodora 47:

149. 1945) concluded: ". . . I have abandoned the futile attempt to see two species or two varieties in the glabrous-leaved material and that with leaves densely pubescent beneath, and I cannot look upon them as anything but glabrous and pubescent forms of one species *P. Borbonia* (L.) Spreng."

The 1953 checklist, which omitted forms, mentioned swampbay in a note as a synonym (Little, U.S. Dep. Agric., Agric. Handb. 41: 253. 1953). However, this variation was treated as a species in the 1927 checklist by George B. Sudworth (U.S. Dep. Agric. Misc. Circ. 92: 124. 1927).

In her monograph, Lucille E. Kopp (Mem. N.Y. Bot. Gard. 14(1): 45-46. 1966) accepted swampbay, *Persea palustris* (Raf.) Sarg., as a species, stating: "The kind of pubescence on vegetative parts, erect and crisped, and the length of the peduncle are the main differences discernible from herbarium material which separate *P. palustris* from *P. borbonia* . . . ." Charles Sprague Sargent (Man. Trees North Am. ed. 2, corr. 357-359. 1926) accepted both species. Earlier (Silva North Am. 7: 7-8. 1895), he noted that swampbay has thin bark and is found on wet thin soil of swamps near the coast (thus, in a different vegetation type and narrow zone).

The differences in leaf pubescence, visible with a hand lens, are well illustrated in photographs taken with the scanning electron microscope by B. Eugene Wofford and Ronald W. Pearman (An SEM study of leaf surface pubescence in the southeastern taxa of Persea. Sida 6: 19-23, illus. 1975). They accepted *Persea palustris* as a species also.

POPULUS FREMONTII var. MESETAE (Eckenwalder) Little, comb. nov.
meseta cottonwood

Populus fremontii ssp. *mesetae* Eckenwalder, J. Arnold. Arbor. 58: 201, fig. 1977.

This cottonwood was included under *Populus fremontii* Wats. (Proc. Am. Acad. Arts Sci. 10: 350. 1875), Fremont cottonwood, in the 1953 checklist (p. 285). It has been accepted as a species, *Populus arizonica*, Arizona cottonwood, for example, in the 1927 checklist (p. 64). Also by Charles Sprague Sargent (Man. Trees North Am. ed. 2, corr. 131. 1926), Donovan S. Correll (Fl. Tex. 3: 397-399, pl. 58. 1961), and Little (Atlas U.S. Trees 3: map 115. 1976).

James E. Eckenwalder (J. Arnold Arbor. 58: 201-203. 1977) proposed a new epithet with rank of subspecies for this cottonwood that has been called *Populus mexicana* auct. non Wesm. as well as *P. arizonica* auct. non Sarg. He concluded that none of the five epithets applied to this tree could be used. Apparently no epithet with rank of variety is available.

QUERCUS TURBINELLA var. AJOENSIS (C. H. Muller) Little, comb. nov.
Ajo oak

Quercus ajoensis C. H. Muller, Madroño 12: 140, fig. 1. 1954.
Quercus turbinella ssp. *ajoensis* (C. H. Muller) Felger & Lowe, J. Ariz. Acad. Sci. 6: 83. 1970.

Shortly after publication of the 1953 checklist, this oak was named as a new species by Cornelius H. Muller (A new species of Quercus in Arizona. Madroño 12: 140-145, fig. 1. 1954; Muller and Tucker 9519, isotype at US). It was related to *Quercus turbinella* Greene (in Kellogg & Greene, Illus. West Am. Oaks 37. 1889; 59, pl. 27. 1890), turbinella oak (shrub live oak).

The original author noted the occurrence of intermediates (presumably of hybrid origin) and concluded that the new species was nearing extinction. The range extends from southwestern Arizona to Baja California (Little, Atlas U.S. Trees 3: map 130. 1976). This oak has been reduced to a subspecies.

PINUS ARISTATA var. LONGAEVA (D. K. Bailey) Little, comb. nov.
Intermountain bristlecone pine

Pinus longaeva D. K. Bailey, Ann. Mo. Bot. Gard. 57: 243, fig. 23. 1970.

This pine has attracted attention because of the great age of certain individuals, confirmed by counts of annual growth rings in the wood. The Ancient Bristlecone Pine Forest Botanical Area within Inyo National Forest near Bishop, California, contains many trees more than 4,000 years old, one more than 4,600 (Schulman, Edmund. Bristlecone pine, oldest known living thing. Natl. Geogr. Mag. 113: 355-372, illus. 1958). Another grove in the Wheeler Peak Scenic Area, Humboldt National Forest, southeast of Ely, Nevada, had a tree about 4,900 years old (Currey, Donald R. An ancient bristlecone pine stand in eastern Nevada. Ecology 46: 564-566, illus. 1965). Thus, these pine trees are the world's oldest known dated living trees.

Less than a decade ago, this pine was segregated as a species by D. K. Bailey (Phytogeography and taxonomy of Pinus subsection Balfourianae. Ann. Mo. Bot. Gard. 57: 210-249, illus. 1970). (Isotype at US: D. K. Bailey & J. E. Whitson 7001, Wheeler Peak Scenic Area, White Pine Co., Nevada.)

Earlier this variation had been included almost universally in *Pinus aristata* Engelm. (in Parry & Engelm., Am. J. Sci. Arts, Ser. 2, 34: 331. 1862), bristlecone pine. Also, that species had been reduced by its author to a variety of a related species, *Pinus balfouriana* Grev. & Balf., foxtail pine: *Pinus balfouriana* var. *aristata* (Engelm.) Engelm. (in Rothr., Wheeler Rep. U.S. Geogr. Surv. 6: 375. 1878).

A photograph of an ancient tree, as *Pinus longaeva*, Intermountain bristlecone pine, was featured on the cover and frontispiece of Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A. (vol. 1, 1972) by Arthur Cronquist, Arthur H. Holmgren, Noel H. Holmgren, and James L. Reveal. They summarized the distinguishing characters (p. 231-232): needles with 2 resin ducts (instead of 1, often with whitish dot of exuded resin, beneath a prominent groove) and cones with rounded bases and fine bristles (instead of truncate bases and stout bristles).

Variations in the essential oils of wood and foliage were found by Eugene Zavarin and Karel Snajberk (Variability of the wood monoterpenoids from Pinus aristata. Biochem. Syst. 1: 39-44, illus. 1973; also with Dana Bailey. Variability in the essential oils of wood and foliage of Pinus aristata and Pinus longaeva. Biochem. Syst. 4: 81-92, illus. 1976). Those authors accepted two species but observed geographical intermediates.

Cross pollination tests of these related pines were made by William B. Critchfield (Hybridization of foxtail and bristlecone pines. Madroño 24: 193-212. 1977). He noted that crosses between the bristlecone pines from California and Colorado were relatively unsuccessful.

The genus *Pinus* is ancient geologically and appeared in the fossil record as early as the Jurassic period. Minor geographic variations, races, provenances, etc., some unworthy of taxonomic rank, have been noted in many species. Careful studies in other species doubtless will reveal additional minor differences.

Under a conservative classification of the genus *Pinus*, the variation cited above is transferred here to rank of variety. The natural range of var. *longaeva* is local in high mountains near timberline in Utah, Nevada, and eastern California. The typical variety, *Pinus aristata* Engelm. var. *aristata*, Colorado bristlecone pine, is local in high mountains near timberline in Colorado, northern New Mexico, and northern Arizona (San Francisco Mt.).

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